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**MASTER OF BUSINESS ADMINISTRATION  
(CORPORATE GOVERNANCE) (MBACG)**

**Term-End Examination**

**December, 2011**

**MCT-020 : MANAGEMENT SCIENCE**

*Time : 3 hours*

*Maximum Marks : 100*

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*Note : Attempt any five questions. All questions carry equal marks. Use Graph paper where required.*

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1. (a) Discuss the different approaches by which probability can be understood.  
(b) 'A' speaks the truth in 60% of the cases. 'B' speaks the truth in 70% of the cases. In what percentage of cases are they likely to contradict each other in stating the same fact ?
  
2. (a) Explain what is meant by Joint probability and Marginal Probability ?  
(b) In a railway reservation office, two clerks are engaged in checking reservation forms. On an average clerk A checks 55% of the forms while clerk B checks the balance. While clerk A has an error rate of 3%, clerk B has an error rate of 2%. If a reservation

form is picked at random and is found to have an error. What is the probability that the form was checked by Clerk A ?

3. (a) Explain the condition under which a probability distribution would be considered as Binomial.  
(b) A student attempts 8 multiple choice questions each containing 4 options. The student resorts to guess work as his method of answering these questions. What is the probability that he will get at most 3 answers correct ? If he keeps giving these type of multiple choice tests on an average how many questions can be expect to get correct and the variance of his correct answers ?
4. (a) Distinguish between Discrete and Continuous probability distribution.  
(b) Filling of cans of oil is Normally distributed. A firm is setting up a filling plant to fill oil in cans containing 5000 ml of oil. A stipulation of the weights and measures department is that not more than 1% of cans can contain less than 5000 ml of oil. If the standard deviation of the filling machine is 200 ml, how should the firm adjust the filling machine's mean rate of fill so that this stipulation can be fulfilled. (Z value of 1% at one end of the right tail is 2.33 and at the left tail is - 2.33)

5. The R and D department is planning to bid on a large project for the development of a new communication system for commercial planes. The accompanying table shows the activities, times and sequence required. Draw the network for the project, calculate the schedule completion and indicate the critical path.

Activity	Immediate predecessor	Time (weeks)
A	-	3
B	A	2
C	A	4
D	A	4
E	B	6
F	C,D	6
G	D,F	2
H	D	3
I	E,G,H	3

6. (a) Solve the following game theory problem :

	B1	B2	B3	B4	B5
A1	-2	0	0	5	3
A2	3	2	1	2	2
A3	-4	-3	0	-2	6
A4	5	3	4	2	6

- (b) Solve the above problem using Dominance Theory.

7. (a) What do you understand by the term Initial Feasible solution to a Linear Programming Problem ?
- (b) Solve the following L.P. Problem using Graphical Technique.
- Minimize :  $Z = 0.3A + 0.9B$
- Subject to :  $A + B \geq 800$
- $0.21A - 0.30B \leq 0$
- $0.03A - 0.01B \geq 0$
- $A, B \geq 0$
8. Write short notes on *any two* of the following :
- (a) How decision tree analysis can be used to arrive at decision making ?
- (b) What does a degenerate solution mean in the context of a Transportation problem ?
- (c) Explain the uses of Dual-Simplex relationship in Linear Programming.
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